Plant Pathology Circular No. 196
January 1979

Fla. Dept. Agric. & Consumer Serv.
Division of Plant Industry

PECAN SCAB

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INTRODUCTION. Pecan trees (Carya illinoensis (Wang.) K. Koch) are widely grown in North Florida both for shade and nuts, and they must be protected from diseases and insect pests to produce a bountiful nut crop. The most serious disease of pecan in the southeastern United States is pecan scab (A). The causal agent is the fungus, Fusicladium effusum Wint. (formerly designated Cladosporium effusum (Wint.) Dem.). The scab pathogen attacks only the rapidly growing tissues of the leaves, shoots, and nuts. While the disease on the leaves and shoots is rarely serious, disease on the developing nuts can result in a total loss of the pecan crop.

Pecan scab was first noted in 1888 in Louisiana. For many years it was considered a disease that was limited to certain susceptible varieties that were planted within 100 miles of the Gulf and Atlantic Coasts. In 1924, Demaree (1) observed that the pathogen was spreading steadily inland and was attacking varieties that were theretofore considered resistant. Soon it was demonstrated that the pathogen possessed the capacity to quickly produce new pathogenic strains (races) which overcame varietal resistance (2).

SYMPTOMS. On leaves, the disease first appears as elongated olive-brown spots on the veins of the lower surface of the expanding foliage, and a similar spotting follows on the upper leaf surface. The lesions expand into nearby tissue and form nearly circular, black necrotic spots (fig. 1). Lesion development on the shoots is similar to that observed on leaves; however, the disease may be more severely expressed on shoots than on leaves. Shoots that are still expanding and are diseased may die back 3-8 in (7.6-20.3 cm). The lesions on the developing nuts first appear as small black dots on the husks. Adjacent lesions may coalesce to form large, generally sunken black areas (fig. 2), which may encompass the entire nut. Severely affected nuts may drop prematurely or they may cease developing, die, and remain attached.

Fig. 1. Lesions on mature leaves.

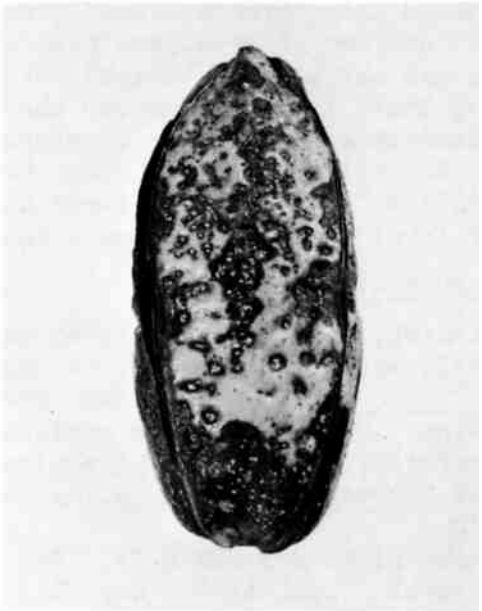

Fig- 2. Lesions on a mature nut.

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DISSEMINATION. F. effusum overwinters in infected shoots and in old shucks and leaves on the trees as well as fallen plant litter. When environmental conditions become warm and humid in the spring, the fungus begins to grow in the overwintering tissue and produces great numbers of spores that are spread by wind and rain and initiate infection on newly developing leaves, young shoots, and developing nuts. The scab fungus is slow to invade noncontiguous orchards except where it is introduced on scion wood or nursery trees, or where it is spread by mechanical harvesters (3). For example, scab on the 'Stuart' variety was first reported at Alexandria, Louisiana, in 1928 and was not reported at Shreveport (100 miles to the northwest) until 1968 (3). During the last decade, the use of mechanical nut harvesters has increased. This practice, along with movement of nursery stock from distant geographic areas, has speeded the process whereby newly emerging strains (or races) are disseminated to new areas.

CONTROL. Pecan varieties vary in their susceptibility to scab disease. New varieties such as 'Shoshoni', 'Chickasaw', and 'Cheyenne' are more scab resistant, and the trees are smaller at maturity and bear fruit earlier than older, more common varieties. 'Elliot', an older variety, is still scab resistant and bears high quality nuts. Despite the scab susceptibility of older varieties such as 'Stuart', 'Desirable', and 'Curtis', these varieties will continue in production and in propagation because of their nut quality.

The control of scab depends primarily on the protection of tender leaf, nut, and shoot surfaces with proper application of fungicides from the time of leaf unfolding until the nut is developed (see the latest revision of "Pecan Insect and Disease Recommendations" by J. C. Ball and W. J. French*). Homeowners usually cannot provide chemical control because they lack the equipment required for application. If the disease becomes established on young foliage, it is more difficult to prevent infection on the nuts during the remainder of the season. It should be noted that within the last few years, downy spot incited by Mycosphaerella caryigena Demaree and Cole has caused premature defoliation of pecan trees. Early application of fungicide to control scab will also control downy spot.

Even the most complete spray program can be improved by cultural practices. Knocking shucks from branches and removing (turning under or raking and destroying) fallen shucks, leaves, and branchlets reduce the springtime inoculum. Providing better air circulation beneath trees (i.e. mowing, killing, or discing weeds and pruning lower limbs) reduces the possibility of infection because conditions are less favorable for disease development. Maintaining tree vigor by following recommended fertility practices (see Circular No. 280-B, "Pecan Production Guide for Florida" by Calvin E. Arnold and Fred P. Lawrence*) enables a tree to maintain a higher level of scab resistance than on inadequately fertilized trees.

LITERATURE CITED.

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*Available from County Extension Agents in Florida.